

**WHAT IS CLAIMED IS:**

1. A photonic network node comprising:  
means for demultiplexing an optical signal into channels;  
5 photonic switch fabric;  
means for monitoring before and after the photonic switch fabric;  
means for protecting channels responsive to the monitoring means;  
means for compensating for channel impairment responsive to the  
monitoring means; and  
10 means for multiplexing a plurality of channels into an optical.
2. A node as claimed in claim 1 wherein the photonic switch fabric includes  
a plurality of optical switch planes.
- 15 3. A node as claimed in claim 1 wherein the means for demultiplexing  
includes an 1:M demultiplexer.
4. A node as claimed in claim 1 wherein the means for monitoring includes  
fast line scanners.
- 20 5. A node as claimed in claim 4 wherein the fast line scanners couple prior  
to the means for demultiplexing.
6. A node as claimed in claim 4 wherein the fast line scanners couple after  
25 the means for multiplexing.
7. A node as claimed in claim 1 wherein the means for monitoring includes  
slow line scanners.
- 30 8. A node as claimed in claim 4 wherein the slow line scanners couple prior  
to the means for demultiplexing.
9. A node as claimed in claim 4 wherein the slow line scanners couple after  
the means for multiplexing.
- 35 10. A node as claimed in claim 1 wherein the means for monitoring includes  
wrapper readers.

11. A node as claimed in claim 1 wherein the means for monitoring includes channels performance monitors.

5 12. A node as claimed in claim 1 wherein the means for multiplexing includes an M:1 multiplexer.

13. A photonic node for multi-vendor and multi-carrier interworking comprising  
means for performance monitoring; and  
10 means for impairment compensating coupled thereto.

14. A photonic node as claimed in claim 13 wherein the means for monitoring supports network wide performance and fault management, and the triggering of network wide protection and restoration options.

15 15. A photonic node as claimed in claim 13 wherein the means for monitoring includes means for triggering of network wide protection and restoration.

16. A photonic node as claimed in claim 13 wherein the means for monitoring  
20 includes means for detecting and isolating photonic node specific faults and mis-connects, and means for triggering protection switching to redundant modules when appropriate.

17. A photonic node as claimed in claim 13 wherein the means for monitoring  
25 includes photonic node output channel power level compensation responsive thereto.

18. A photonic node as claimed in claim 13 wherein the means for monitoring  
30 includes photonic node output channel dispersion compensation responsive thereto.

19. A photonic node as claimed in claim 13 further comprising means for interfacing with electrical signaling network nodes.

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